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Nitrogen Newsletter is a summary of recent publications, news and reports related to the cycling, effects and management of nitrogen. Prepared by Mary O'Brien and Jana Compton. Contact Jana Compton with any questions (Compton.jana@epa.gov)

Please note: Most of these links are available to EPA staff through library access – not all links will be available to folks outside EPA, depending on your access to specific journals and websites.

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Special Issues

Wassenaar LI, Yerubandi RR, editors. 2012. **Special issue on Lake Winnipeg – The forgotten Great Lake.** J Great Lakes Res 38(S3):1-196. Available from:
<http://www.sciencedirect.com/science/journal/03801330/38/supp/S3>

Articles

Ackermann K, Zackrisson O, Rousk J, Jones,DL, DeLuca TH. 2012. **N-2 fixation in feather mosses is a sensitive indicator of N deposition in boreal forests.** Ecosystems 15(6):986-998. Available from: <http://dx.doi.org/10.1007/s10021-012-9562-y>

Altman JC, Paerl HW. 2012. **Composition of inorganic and organic nutrient sources influences phytoplankton community structure in the New River Estuary, North Carolina.** Aquat Ecol 46(3):269-282. Available from: <http://dx.doi.org/10.1007/s10452-012-9398-8>

Bai E, Houlton BZ, Wang YP. 2012. **Isotopic identification of nitrogen hotspots across natural terrestrial ecosystems.** Biogeosciences 9(8):3287-3304. Available from: <http://dx.doi.org/10.5194/bg-9-3287-2012>

- Banerjee S, Siciliano SD. 2012. **Spatially tripartite interactions of denitrifiers in arctic ecosystems: activities, functional groups and soil resources.** Environ Microbiol 14(9, SI):2601-2613. Available from: <http://dx.doi.org/10.1111/j.1462-2920.2012.02814.x>
- Banger K, Tian HQ, Lu CQ. 2012. **Do nitrogen fertilizers stimulate or inhibit methane emissions from rice fields?** Global Change Biol 18(10):3259-3267. Available from: <http://dx.doi.org/10.1111/j.1365-2486.2012.02762.x>
- Broussard WP, Turner RE, Westra JV. 2012. **Do federal farm policies influence surface water quality?** Agr Ecosyst Environ 158:103-109. Available from: <http://dx.doi.org/10.1016/j.agee.2012.05.022>
- Bruesewitz DA, Tank JL, Hamilton SK. 2012. **Incorporating spatial variation of nitrification and denitrification rates into whole-lake nitrogen dynamics.** J Geophys Res-Biogeo 117:G00N07. Available from: <http://dx.doi.org/10.1029/2012JG002006>
- Caille F, Riera JL, Rosell-Mele A. 2012. **Modelling nitrogen and phosphorus loads in a Mediterranean river catchment (La Tordera, NE Spain).** Hydrol Earth Syst Sc 16(8):2417-2435. Available from: <http://dx.doi.org/10.5194/hess-16-2417-2012>
- Cameron KA, Hodson AJ, Osborn AM. 2012. **Carbon and nitrogen biogeochemical cycling potentials of supraglacial cryoconite communities.** Polar Biol 35(9):1375-1393. Available from: <http://dx.doi.org/10.1007/s00300-012-1178-3>
- Choi Y, Kim H, Tong D, Lee P. 2012. **Summertime weekly cycles of observed and modeled NO_x and O₃ concentrations as a function of satellite-derived ozone production sensitivity and land use types over the Continental United States.** Atmos Chem Phys 12(14):6291-6307. Available from: <http://dx.doi.org/10.5194/acp-12-6291-2012>
- Crowley KF, McNeil BE, Lovett GM, Canham CD, Driscoll CT, Rustad LE, Denny E Hallett RA, Arthur MA, Boggs JL, Goodale CL, Kahl JS, McNulty SG, Ollinger SV, Pardo LH, Schaberg PG, Stoddard JL, Weand MP, Weathers KC. 2012. **Do nutrient limitation patterns shift from nitrogen toward phosphorus with increasing nitrogen deposition across the northeastern United States?** Ecosystems 15(6):940-957. Available from: <http://dx.doi.org/10.1007/s10021-012-9550-2>
- Davidson EA. 2012. **Representative concentration pathways and mitigation scenarios for nitrous oxide.** Environ Res Lett 7(2):024005. Available from: <http://dx.doi.org/10.1088/1748-9326/7/2/024005>
- Davis M, Coker G, Watt M, Graham D, Pearce S, Dando J. 2012. **Nitrogen leaching after fertilising young *Pinus radiata* plantations in New Zealand.** Forest Ecol Manag 280: 20-30. Available from: <http://dx.doi.org/10.1016/j.foreco.2012.06.009>

de Vos T, Zhang LM. 2012. **High resolution mapping of total deposition of acidifying pollutants.** Atmos Environ 57:80-90. Available from: <http://dx.doi.org/10.1016/j.atmosenv.2012.04.037>

Demissie Y, Yan E, Wu M. 2012. **Assessing regional hydrology and water quality implications of large-scale biofuel feedstock production in the Upper Mississippi River Basin.** Environ Sci Technol 46(16):9174-9182. Available from: <http://dx.doi.org/10.1021/es300769k>

Dixon JC, Campbell SW, Durham B. 2012. **Geologic nitrogen and climate change in the geochemical budget of Karkevagge, Swedish Lapland.** Geomorphology 167(SI):70-76. Available from: <http://dx.doi.org/10.1016/j.geomorph.2012.03.011>

Fagotti DSL, Miyauchi MYH, Oliveira AG, Santinoni IA, Eberhardt DN, Nimtz A, Ribeiro RA, Paula AM, Queiroz CAS, Andrade G, Zangaro W, Nogueira MA. 2012. **Gradients in N-cycling attributes along forestry and agricultural land-use systems are indicative of soil capacity for N supply.** Soil Use Manage 28(3):292-298. Available from: <http://dx.doi.org/10.1111/j.1475-2743.2012.00418.x>

Fang YT, Koba K, Makabe A, Zhu FF, Fan SY, Liu XY, Yoh M. 2012. **Low delta O-18 values of nitrate produced from nitrification in temperate forest soils.** Environ Sci Technol 46(16):8723-8730. Available from: <http://dx.doi.org/10.1021/es300510r>

Fernandes M, Benger S, Sharma SK, Gaylard S, Kildea T, Hoare S, Braley M, Irving AD. 2012. **The use of delta N-15 signatures of translocated macroalgae to map coastal nutrient plumes: improving species selection and spatial analysis of metropolitan datasets.** J Environ Monitor 14(9):2399-2410. Available from: <http://dx.doi.org/10.1039/c2em10997b>

Fisher JB, Badgley G, Blyth E. 2012. **Global nutrient limitation in terrestrial vegetation.** Global Biogeochem Cy 26:GB3007. Available from: <http://dx.doi.org/10.1029/2011GB004252>

Gadegast M, Hirt U, Opitz D, Venohr M. 2012. **Modelling changes in nitrogen emissions into the Oder River System 1875-1944.** Reg Environ Change 12(3):571-580. Available from: <http://dx.doi.org/10.1007/s10113-011-0270-5>

Ginoux P, Clarisse L, Clerbaux C, Coheur PF, Dubovik O, Hsu,NC, Van Damme M. 2012. **Mixing of dust and NH3 observed globally over anthropogenic dust sources.** Atmos Chem Phys 12(16):7351-7363. Available from: <http://dx.doi.org/10.5194/acp-12-7351-2012>

Grantz EM, Kogo A, Scott JT. 2012. **Partitioning whole-lake denitrification using in situ dinitrogen gas accumulation and intact sediment core experiments.** Limnol Oceanogr 57(4):925-935. Available from: <http://dx.doi.org/10.4319/lo.2012.57.4.0925>

Greaver TL, Sullivan JT, Herrick JD, Barber MC, Baron JS, Cosby BJ, Deerhake ME, Dennis RL, Dubois JJB, Goodale CL, Herlihy AT, Lawrence GB, Liu L, Lynch JA, Novak KJ. 2012.

Ecological effects of nitrogen and sulfur air pollution in the US: what do we know? Front Ecol Environ 10(7):365-372. Available from: <http://dx.doi.org/10.1890/110049>

Gurdak JJ, Qi SL. 2012. **Vulnerability of recently recharged groundwater in principle [sic] aquifers of the United States to nitrate contamination (vol 46, pg 6004, 2012)[Correction].** Environ Sci Technol 46(14):7925. Available from: <http://dx.doi.org/10.1021/es302277f>

Hand JL, Gebhart KA, Schichtel BA, Malm WC. 2012. **Increasing trends in wintertime particulate sulfate and nitrate ion concentrations in the Great Plains of the United States (2000-2010).** Atmos Environ 55:107-110. Available from:
<http://dx.doi.org/10.1016/j.atmosenv.2012.03.050>

Hansen B, Dalgaard T, Thorling L, Sorensen B, Erlandsen M. 2012. **Regional analysis of groundwater nitrate concentrations and trends in Denmark in regard to agricultural influence.** Biogeosciences 9(8):3277-3286. Available from: <http://dx.doi.org/10.5194/bg-9-3277-2012>

Harms TK, Jones JB. 2012. **Thaw depth determines reaction and transport of inorganic nitrogen in valley bottom permafrost soils.** Global Change Biol 18(9):2958-2968. Available from: <http://dx.doi.org/10.1111/j.1365-2486.2012.02731.x>

Henault C, Grossel A, Mary B, Roussel M, Leonard J. 2012. **Nitrous oxide emission by agricultural soils: A review of spatial and temporal variability for mitigation.** Pedosphere 22(4 SI):426-433. Available from: [http://dx.doi.org/10.1016/S1002-0160\(12\)60029-0](http://dx.doi.org/10.1016/S1002-0160(12)60029-0)

Hinsby K, Markager S, Kronvang B, Windolf J, Sonnenborg TO, Thorling L. 2012. **Threshold values and management options for nutrients in a catchment of a temperate estuary with poor ecological status.** Hydrol Earth Syst Sc 16(8):2663-2683. Available from:
<http://dx.doi.org/10.5194/hess-16-2663-2012>

Hudman RC, Moore NE, Mebust AK, Martin RV, Russell AR, Valin LC, Cohen RC. 2012. **Steps towards a mechanistic model of global soil nitric oxide emissions: implementation and space based-constraints.** Atmos Chem Phys 12(16):7779-7795. Available from:
<http://dx.doi.org/10.5194/acp-12-7779-2012>

Jackson-Blake L, Helliwell RC, Britton AJ, Gibbs S, Coull MC, Dawson L. 2012. **Controls on soil solution nitrogen along an altitudinal gradient in the Scottish uplands.** Sci Total Environ 431:100-108. Available from: <http://dx.doi.org/10.1016/j.scitotenv.2012.05.019>

Johnson LT, Roye, TV, Edgerton JM, Leff LG. 2012. **Manipulation of the dissolved organic carbon pool in an agricultural stream: Responses in microbial community structure, denitrification, and assimilatory nitrogen uptake.** Ecosystems 15(6):1027-1038. Available from: <http://dx.doi.org/10.1007/s10021-012-9563-x>

Jorgensen CJ, Elberling B. 2012. **Effects of flooding-induced N₂O production, consumption and emission dynamics on the annual N₂O emission budget in wetland soil.** Soil Biol Biochem 53:9-17. Available from: <http://dx.doi.org/10.1016/j.soilbio.2012.05.005>

Jung K, Chang SX. 2012. **Four years of simulated N and S depositions did not cause N saturation in a mixedwood boreal forest ecosystem in the oil sands region in northern Alberta, Canada.** Forest Ecol Manag 280:62-70. Available from: <http://dx.doi.org/10.1016/j.foreco.2012.06.002>

Kohlpaintner M, Huber C, Gottlein A. 2012. **Improving the precision of estimating nitrate (NO₃-) concentration in seepage water of forests by prestratification with soil samples.** Eur J Forest Res 131(5):1399-1409. Available from: <http://dx.doi.org/10.1007/s10342-012-0606-9>

Lam SK, Chen DL, Norton R, Armstrong R, Mosier AR. 2012. **Nitrogen dynamics in grain crop and legume pasture systems under elevated atmospheric carbon dioxide concentration: A meta-analysis.** Global Change Biol 18(9):2853-2859. Available from: <http://dx.doi.org/10.1111/j.1365-2486.2012.02758.x>

Larsen KS, Michelsen A, Jonasson S, Beier C, Grogan P. 2012. **Nitrogen uptake during fall, winter and spring differs among plant functional groups in a subarctic heath ecosystem.** Ecosystems 15(6):927-939. Available from: <http://dx.doi.org/10.1007/s10021-012-9555-x>

Leonard S, Gentilesca T, Guerrieri R, Ripullone F, Magnani F, Mencuccini M, Noije TV, Borghetti M. 2012. **Assessing the effects of nitrogen deposition and climate on carbon isotope discrimination and intrinsic water-use efficiency of angiosperm and conifer trees under rising CO₂ conditions.** Global Change Biol 18(9):2925-2944. Available from: <http://dx.doi.org/10.1111/j.1365-2486.2012.02757.x>

Ohte N. 2012. **Implications of seasonal variation in nitrate export from forested ecosystems: A review from the hydrological perspective of ecosystem dynamics.** Ecol Res 27(4):657-665. Available from: <http://dx.doi.org/10.1007/s11284-012-0956-2>

Pan YP, Wang YS, Tang GQ, Wu D. 2012. **Wet and dry deposition of atmospheric nitrogen at ten sites in Northern China.** Atmos Chem Phys 12(14):6515-6535. Available from: <http://dx.doi.org/10.5194/acp-12-6515-2012>

Parfitt RL, Stevenson BA, Dymond JR, Schipper LA, Baisden WT, Ballantine DJ. 2012. **Nitrogen inputs and outputs for New Zealand from 1990 to 2010 at national and regional scales.** New Zeal J Agr Res 55(3):241-262. Available from: <http://dx.doi.org/10.1080/00288233.2012.676991>

Revell LE, Bodeker GE, Smale D, Lehmann R, Huck PE, Williamson BE, Rozanov E, Struthers H. 2012. **The effectiveness of N₂O in depleting stratospheric ozone.** Geophys Res Lett 39:L15806. Available from: <http://dx.doi.org/10.1029/2012GL052143>

Rheinhardt R, Brinson M, Meyer G, Miller K. 2012. **Integrating forest biomass and distance from channel to develop an indicator of riparian condition.** Ecol Indic 23:46-55. Available from: <http://dx.doi.org/10.1016/j.ecolind.2012.03.017>

Riddick SN, Dragosits U, Blackall TD, Daunt F, Wanless S, Sutton MA. 2012. **The global distribution of ammonia emissions from seabird colonies.** Atmos Environ 55:319-327. Available from: <http://dx.doi.org/10.1016/j.atmosenv.2012.02.052>

Ruoho-Airola T, Eilola K, Savchuk OP, Parviaainen M, Tarvainen V. 2012. **Atmospheric nutrient input to the Baltic Sea from 1850 to 2006: A reconstruction from modeling results and historical data.** Ambio 41(6 SI):549-557. Available from: <http://dx.doi.org/10.1007/s13280-012-0319-9>

Schelde K, Cellier P, Bertolini T, Dalgaard T, Weidinger T, Theobald MR, Olesen JE. 2012. **Spatial and temporal variability of nitrous oxide emissions in a mixed farming landscape of Denmark.** Biogeosciences 9(8):2989-3002. Available from: <http://dx.doi.org/10.5194/bg-9-2989-2012>

Schneider P, van der A RJ. 2012. **A global single-sensor analysis of 2002-2011 tropospheric nitrogen dioxide trends observed from space.** J Geophys Res-Atmos 117: D16309. Available from: <http://dx.doi.org/10.1029/2012JD017571>

Southon GE, Green ER, Jones AG, Barker CG, Power SA. 2012. **Long-term nitrogen additions increase likelihood of climate stress and affect recovery from wildfire in a lowland heath.** Global Change Biol 18(9):2824-2837. Available from: <http://dx.doi.org/10.1111/j.1365-2486.2012.02732.x>

Templer PH, Mack MC, Chapin FS, Christenson LM, Compton JE, Crook HD, Currie WS, Curtis CJ, Dail DB, D'Antonio CM, Emmett BA, Epstein HE, Goodale CL, Gundersen P, Hobbie SE, Holland K, Hooper DU, Hungate BA, Lamontagne S, Nadelhoffer KJ, Osenberg CW, Perakis SS, Schleppi P, Schimel J, Schmidt IK, Sommarck M, Spoelstra J, Tietema A, Wessel WW, Zak DR. 2012. **Sinks for nitrogen inputs in terrestrial ecosystems: a meta-analysis of N-15 tracer field studies.** Ecology 93(8):1816-1829. Available from: <http://dx.doi.org/10.1890/11-1146.1>

Thomas DC, Zak DR, Filley TR. 2012. **Chronic N deposition does not apparently alter the biochemical composition of forest floor and soil organic matter.** Soil Biol Biochem 54:7-13. Available from: <http://dx.doi.org/10.1016/j.soilbio.2012.05.010>

Townsend AR, Vitousek PM, Houlton BZ. 2012. **The climate benefits of better nitrogen and phosphorus management.** Issues Sci Technol 28(2):85-91. Available from: <http://www.issues.org/28.2/townsend.html>

Vega Thurber R, Burkepile DE, Correa AMS, Thurber AR, Shantz AA, Welsh R, Pritchard C, Rosales S. 2012. **Macroalgae decrease growth and alter microbial community structure of**

the reef-building coral, *Porites astreoides*. PLoS ONE 7(9):e44246. Available from: <http://dx.doi.org/10.1371/journal.pone.0044246>

Venkataraman K, Uddameri V. 2012. **Modeling simultaneous exceedance of drinking-water standards of arsenic and nitrate in the Southern Ogallala aquifer using multinomial logistic regression.** J Hydrol 458:16-27. Available from: <http://dx.doi.org/10.1016/j.jhydro1.2012.06.028>

Weber T, Deutsch C. 2012. **Oceanic nitrogen reservoir regulated by plankton diversity and ocean circulation.** Nature 489(7416):419-422. Available from: <http://dx.doi.org/10.1038/nature11357>

Wu YP, Liu SG. 2012. **Modeling of land use and reservoir effects on nonpoint source pollution in a highly agricultural basin.** J Environ Monitor 14(9):2350-2361. Available from: <http://dx.doi.org/10.1039/c2em30278k>

Xu YF, Huang Y, Li YC. 2012. **Summary of recent climate change studies on the carbon and nitrogen cycles in the terrestrial ecosystem and ocean in China.** Adv Atmos Sci 29(5):1027-1047. Available from: <http://dx.doi.org/10.1007/s00376-012-1206-9>

News

Climate change, algal blooms and 'dead zones' in the Great Lakes. Phys.org 2012 September 12. Available from: <http://phys.org/news/2012-09-climate-algal-blooms-dead-zones.html>

Hypoxia Task Force launches new monitoring efforts to track water quality improvements. EPA News Releases – International 2012 September 12. Available from: <http://yosemite.epa.gov/opa/admpress.nsf/df3c84313061411f8525740a0057efe1/52646d4cebbfe0d185257a770062a7f0!OpenDocument>

Stein A. **Country farmers taking steps to fight lake pollution.** Addison County Independent 2012 September 6. Available from: <http://www.addisonindependent.com/201209country-farmers-taking-steps-fight-lake-pollution>

For Bloomberg BNA subscribers (including EPA staff):

Standaert M. **International issues: China reports progress on reducing levels of three of four targeted pollutants.** Daily Environment Report 2012 September 19. Available from: http://esweb.bna.com/eslw/1245/split_display.adp?fedfid=28039149&vname=dennotallissues&wsn=499737000&searchid=18654178&doctypeid=2&type=date&mode=doc&split=0&scm=1245&pg=1

Pagano S. **Water pollution: Gulf Hypoxia Task Force launches efforts to track effectiveness of nutrient controls.** Daily Environment Report 2012 September 13. Available from: http://esweb.bna.com/eslw/1245/split_display.adp?fedfid=27985840&vname=dennotallissues&

[wsn=499879500&searchid=18654178&doctypeid=2&type=date&mode=doc&split=0&scm=1245&pg=1](http://esweb.bna.com/eslw/1245/split_display.adp?fedfid=27793871&vname=dennotallissues&wsn=500214000&searchid=18654178&doctypeid=2&type=date&mode=doc&split=0&scm=1245&pg=1)

Ware P. Drinking water: Utah using geographic information system to map nitrate in source water, official says. Daily Environment Report 2012 September 6. Available from: http://esweb.bna.com/eslw/1245/split_display.adp?fedfid=27793871&vname=dennotallissues&wsn=500214000&searchid=18654178&doctypeid=2&type=date&mode=doc&split=0&scm=1245&pg=1

For Greenwire subscribers (including EPA staff):

Voosen P. Science: Geologists drive golden spike toward Anthropocene's base. Greenwire 2012 September 17. Available from: <http://www.eenews.net/Greenwire/2012/09/17/archive/1>

Nelson G. Air pollution: Power plant emissions drop even without cross-state rule – EPA. E&ENews PM 2012 September 5. Available from: <http://www.eenews.net/eenewspm/2012/09/05/archive/1>

For Inside EPA subscribers (including EPA staff):

EPA, States launch Mississippi River nutrient monitoring program. Water Policy Report 2012 September 21. Available from: <http://insideepa.com/Water-Policy-Report/Water-Policy-Report-09/21/2012/epa-states-launch-mississippi-river-nutrient-monitoring-program/menu-id-155.html>

DiCosmo B. Virginia regulator raises questions over credits in water trading policy. Daily News 2012 September 19. Available from: <http://insideepa.com/201209192410532/EPA-Daily-News/Daily-News/virginia-regulator-raises-questions-over-credits-in-water-trading-policy/menu-id-95.html>

U.S., Canada revise pact to strengthen Great Lakes water quality rules. Environmental Policy Alert 2012 September 18. Available from: <http://insideepa.com/Environmental-Policy-Alert/Environmental-Policy-Alert-09/19/2012/us-canada-revise-pact-to-strengthen-great-lakes-water-quality-rules/menu-id-160.html>

Obama forms Gulf restoration council. Federal Facilities Watch Monday, 2012 September 10. Available from: <http://insideepa.com/EPA-Daily-News/Federal-Facilities-Watch/obama-forms-gulf-restoration-council/menu-id-927.html>

Heltman J. EPA targets growth sectors for nonpoint 'offsets,' worrying industry. Environmental Policy Alert 2012 September 4. Available from: <http://insideepa.com/Environmental-Policy-Alert/Environmental-Policy-Alert-09/05/2012/epa-targets-growth-sectors-for-nonpoint-offsets-worrying-industry/menu-id-160.html>

Web Pages

Mississippi River/Gulf of Mexico Watershed Nutrient Task Force [Internet]. Washington, DC: U.S. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds. Available from: <http://water.epa.gov/type/watersheds/named/msbasin/index.cfm>

Conservation Reserve Enhancement Program [Internet]. Washington, DC: U.S. Department of Agriculture Farm Service Agency. [Last updated September 25, 2012.] Available from: <http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=cep>